

DENON

AV SURROUND RECEIVER

AVR-3310CI

Owner's Manual [Additional functions edition]

The AVR-3310CI owner's manual is organized in the following two volumes.

- [The original version]
- [Additional functions edition] This version

This version contains descriptions of additional and changed functions only.

The additional and changed functions are items indicated by "✂" in the GUI Menu Map.
GUI Menu Map (☞ page 5)

Manuel de l'Utilisateur [Édition des fonctions supplémentaires]

Le manuel d'utilisation de l'AVR-3310CI est organisé en deux volumes, comme suit.

- [La version originale]
- [Édition des fonctions supplémentaires] La présente version

La présente version contient uniquement les descriptions des fonctions supplémentaires et modifiées.

Les fonctions supplémentaires et modifiées sont signalées par le symbole "✂" dans plan du menu de l'interface graphique GUI.
Plan du menu de l'interface graphique GUI (☞ page 5)

Additional functions

- Addition of Audyssey DSX™ (Dynamic Surround Expansion™)

Audyssey Dynamic Surround Expansion™ (DSX)

Realistic reproduction of sound relies on the ability of audio systems to match human hearing performance. Three key requirements are: (i) frequency response; (2) dynamic range; and (3) accurate spatial reproduction. The requirements for frequency response have already been surpassed with sampling rates that exceed human hearing. The dynamic range limits of human perception have also been met with current digital audio systems operating capable of signal to noise ratios that approach 120 dB. Accurate spatial sound rendering, however, has not yet reached the limits of perception as human perception relies on the combination of sounds arriving from many more directions than what 5.1 surround sound systems provide. Audyssey DSX™ technology was developed to overcome the spatial sound rendering limitations faced by 5.1 surround sound formats.

The ITU 5.1 channel standard recommends three front loudspeakers and two rear loudspeakers. The Left (L) and Right (R) front loudspeakers should be placed at ±30° relative to the central listening position. The Center (C) loudspeaker should be at 0° and the surround loudspeakers (SL, SR) should be placed between 100° and 120°. All loudspeakers must be equidistant from the center listening position or compensated with time delay if that is not possible. A separate lowfrequency effects (LFE) channel is used to reproduce additional bass content from the subwoofer.

There are certain things that 5.1 surround sound systems do well compared to 2-channel stereo. For example, it is possible to move sounds across the front seamlessly. It is also possible to create ambience behind the listener. But 5.1 channel surround systems do not provide enough channels from which to render the required reflected sound components for a seamless and enveloping soundstage. Unfortunately, the additional two back surround channels in 7.1 systems are not in the right place to provide a significant perceptual improvement.



Adding more channels to a surround system is not for special effects. Accurate spatial sound reproduction requires rendering of directional sound cues and non-directional ambient cues. Reflections arriving after the direct sound play a critical role in the perception of soundstage width and depth. To have the most impact, additional surround channels should be used to control the direction, time of arrival, and frequency response of the reflected sound to render an expanded soundstage that reproduces sound with better localization and envelopment than what 5.1 systems provide.

Research in the perception of auditory source width has shown that there are strong preferences in the direction of reflected sound and the perception of soundstage width and spaciousness. The single most important direction of side-wall reflections is ±60°. Audyssey DSX provides a pair of Wide channels (LW and RW) at ±60° with appropriate frequency response and perceptual processing to match the requirements of human hearing. In fact, the Wide channels are much more critical in the presentation of a realistic soundstage than then Back Surround channels found in traditional 7.1 systems. A more enveloping 7.1 channel system is one in which Wide speakers are used instead of Back Surround speakers. Adding surround channels behind the listener has a very small impact compared to the increase in envelopment and soundstage width that the front wide channels will provide.

After side reflections, the next most important acoustical and perceptual cues come from reflections above the front stage. Audyssey DSX provides a pair of Height channels (LH and RH) at a ±45° azimuth angle and elevated to a 45° angle in the median plane.

In addition to creating new Wide and Height channels, Audyssey DSX also provides Surround Processing to enhance the envelopment of the Surround and Back Surround channels (if present). Audyssey DSX Surround Processing processes the standard surround signals in the time and frequency domains to improve the perceived sense of envelopment and blending with the other speakers in the surround system.

Audyssey Dynamic Surround Expansion is a scalable system that can adapt to the practical needs of the user. The first level of surround stage enhancement comes from adding the Wide channels. The second level comes from adding the Height channels. If it is practical to have both Wides and Heights then the surround performance will be further enhanced. Audyssey DSX automatically reconfigures its processing to optimize surround rendering over any number of available speakers beyond 5.1.



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NOTE

When upgrading, the RS-232C connector cannot be used for the DENON RF remote controller.

For details, see “Unavailable Functions After Upgrading” on page 19.

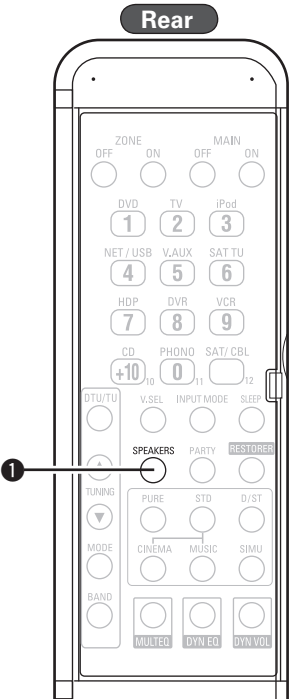
Getting Started

Part Names and Functions

Remote Control Unit

Main Remote Control Unit (RC-1118)

When upgrading, the function of the button shown below is modified.
For the other buttons, refer to page 7 of **[The original version]** Operating Instructions.



1 SPEAKERS button (12, 15)

Amp Assign (☞ page 8)	Surround Mode (☞ page 69 of [The original version] Operating Instructions)	Function when the button is pressed
Front Height	STANDARD	Audyssey DSX ON/OFF (☞ page 15)
	DSP SIMULATION	Front Height ON/OFF (☞ page 12)
	DIRECT/STEREO	No function
Front Wide	STANDARD	Audyssey DSX ON/OFF (☞ page 15)
	DSP SIMULATION	Front Wide ON/OFF (☞ page 12)
	DIRECT/STEREO	No function

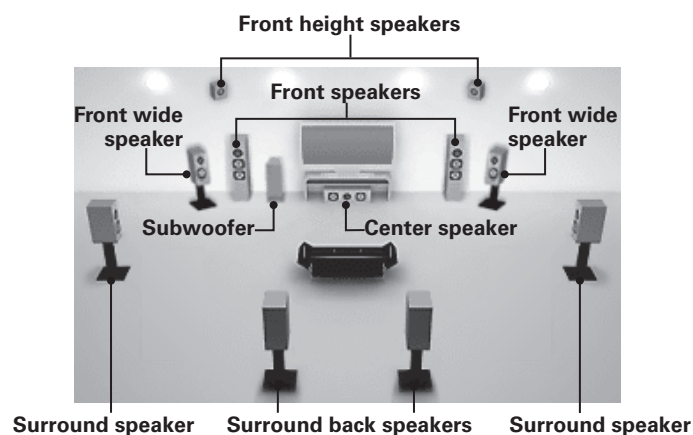
Connections

Installing / Setting the Speakers

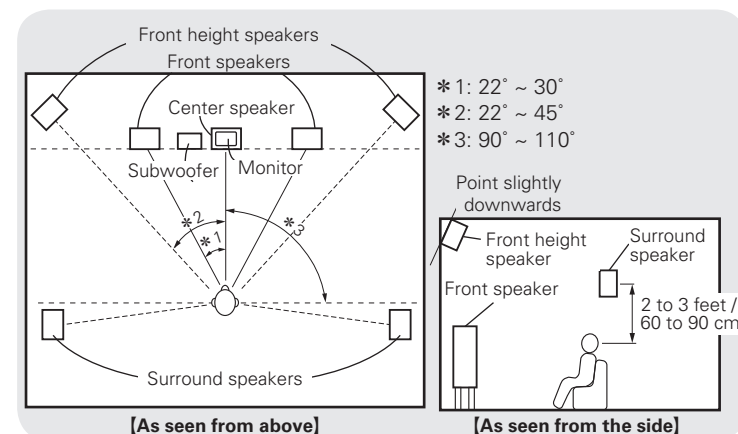
Audyssey DSX™ is a function to reproduce sound with deeper and more spacious surround space. To use Audyssey DSX, install front wide or front height speakers.

1 Determine the Speaker Layout

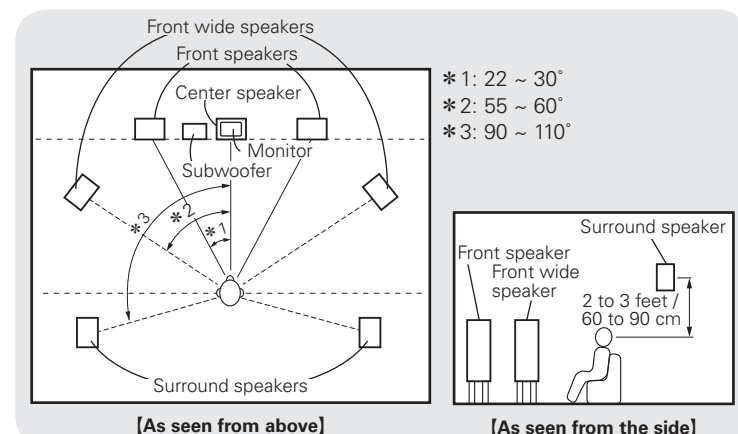
Installing All the Speakers



□ When 7.1ch (Front Height Speaker) Connected



□ When 7.1ch (Front Wide Speaker) Connected





NOTE

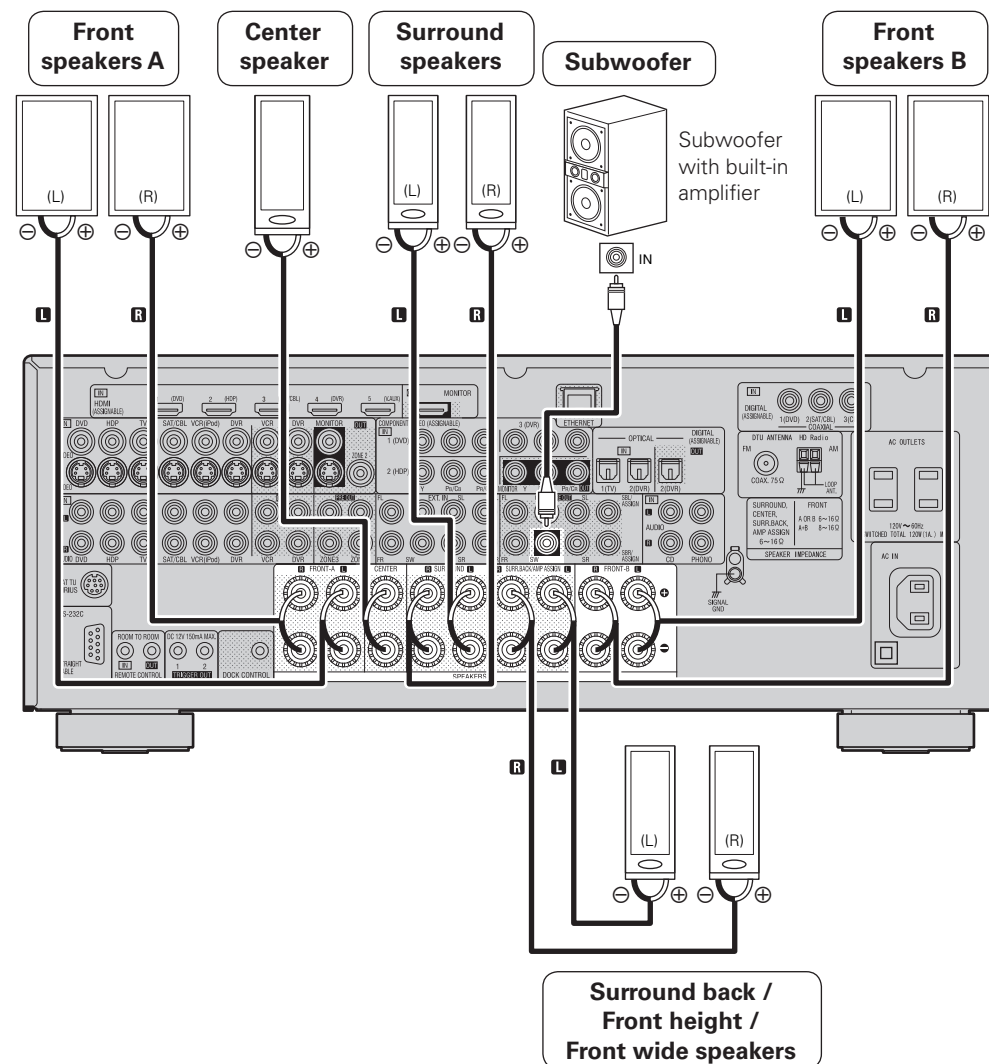
It is not possible to use the surround back speakers, front height speakers and front wide speakers simultaneously.

2 Set the "Amp Assign" Mode According to the Speaker Layout

The signals output from the AVR-3310CI's SURR. BACK/AMP ASSIGN speaker terminals can be switched (☞ page 8 "Amp Assign").

Amp assign mode (☞ page 8)	SURR. BACK / AMP ASSIGN Speaker connections	Example of speaker installation (Number of channels played)
Front Height	Front Height Speakers	
Front Wide	Front Wide Speakers	

Speaker Connections



For connections of the SURR. BACK/AMP ASSIGN speaker terminals, see "Set the "Amp Assign" Mode According to the Speaker Layout" (☞ page 4).

Settings

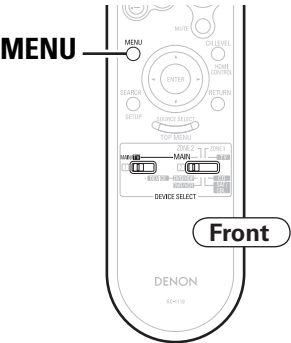


GUI Menu Map

⚡ indicates functions modified by upgrading.



Pressing **MENU** displays the GUI menu. From this menu, you can move to various setting screens.



Setting items	Detailed items	Description	Page
Audio / Video Adjust Adjust various audio and video parameters.	⚡ Audio Adjust	Adjust various audio parameters.	11
	Picture Adjust	Adjust various video parameters.	
	Status	Shows information about current settings.	
	Audio Input Signal	Shows information about audio input signals.	
	HDMI Information	Shows information about HDMI input/output signals and monitor.	
	Auto Surround Mode	Shows information about settings stored for the auto surround mode.	
	Quick Select	Shows information about settings stored for the Quick Select function.	
Information Show information about receiver settings, input signals, etc.	Preset Channel	Shows information about preset channels.	
	Auto Setup Makes the optimum speaker settings and corrects for the acoustic characteristics of the room.	⚡ Audyssey™ Auto Setup Makes the optimum settings for the speakers being used automatically.	6
Manual Setup Use this to make various types of detailed settings.	Parameter Check	Check Audyssey Auto Setup measurement results. This item is only displayed after Audyssey Auto Setup procedure has been performed.	
	⚡ Speaker Setup	Sets the speaker size and distance, the channel level, etc.	8
	HDMI Setup	Make settings for HDMI video/audio output.	
	Audio Setup	Make settings for audio playback.	
	Network Setup	Make network settings.	
	Zone Setup	Make settings for audio playback in the multi-zone system.	
	⚡ Option Setup	Make various other settings.	19
Input Setup Use this to make settings related to playing input sources.	Auto Preset	Use the auto preset function to program radio stations.	
	Preset Skip	Set the preset memories that you do not want to display when tuning.	
	Preset Name	Assign name to a preset memory.	
	Parental Lock	Set the Parental Lock.	
	Antenna Aiming	Adjust the SIRIUS reception sensitivity.	
	Input Assign	Change input connector assignment.	
	Video	Makes the video settings.	
	Input Mode	Sets the audio input mode and decode mode.	
	Rename	Change the display name for this source.	
	Source Level	Adjust the playback level of the audio input.	
	Playback Mode (for iPod)	Make settings for "iPod" playback.	
	Playback Mode (for NET/USB)	Make settings for "NET/USB" playback.	
	Still Picture	Make settings for still picture playback.	



Make the Optimal Speaker Settings, and Correct the Room Acoustics (Audyssey™ Auto Setup)



The acoustic characteristics of the connected speakers and listening room are measured and the optimum settings are made automatically.

Audyssey Auto Setup Flow

1 Connect the Included Setup Microphone



2 Audyssey Auto Setup Preparations

Change the Amplifier Assignment (Amp Assign)

(page 7)

When upgrading, contents of "Amp Assign" are modified.

Set the channel to be measured (Channel Select)



3 Perform Audyssey Auto Setup



Check the Measuring Results and Equalizer Type after Audyssey Auto Setup (Parameter Check)

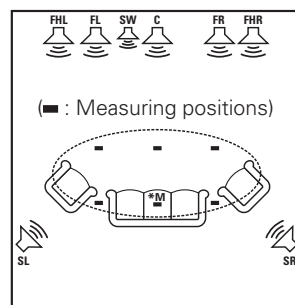
Important Information

Audyssey MultEQ® automatically measures the acoustical problems in the listening environment to create the best audio experience for your home theater.

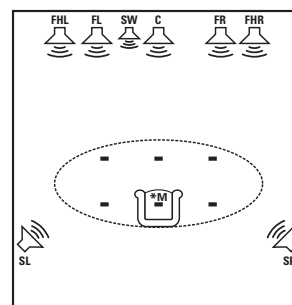
- When Audyssey™ Auto Setup procedure is performed, the MultEQ®, Dynamic EQ® and Dynamic Volume™ functions (page 13 ~15) are enabled.
- Use the included setup microphone (DM-A409) to perform Audyssey Auto Setup procedure.
- Measurements are performed by placing the calibrated microphone successively at multiple positions throughout the listening area as shown in **[Example ①]**. For best results, it is strongly recommended to measure 6 positions so that the measurements have the proper spatial weighting. Even if the listening environment is small as shown in **[Example ②]**, measuring at multiple points throughout the listening environment results in more effective correction.

When using Front Height Speakers

[Example ①]

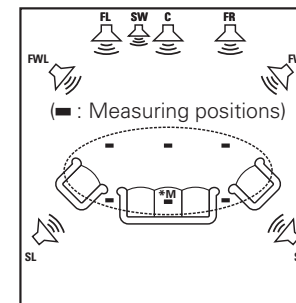


[Example ②]

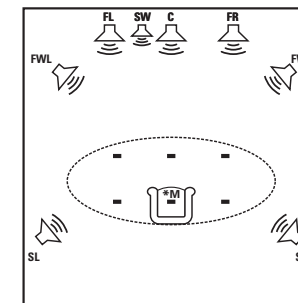


When Using the Front Wide Speakers

[Example ①]



[Example ②]



FL : Front speaker (L)

FR : Front speaker (R)

FHL : Front height speaker (L)

FHR : Front height speaker (R)

FWL : Front wide speaker (L)

FWR : Front wide speaker (R)

C : Center speaker

SW : Subwoofer

SL : Surround speaker (L)

SR : Surround speaker (R)

SBL : Surround back speaker (L)

SBR : Surround back speaker (R)

About the main listening position (*M)

The main listening position refers to the most central position where one would normally sit within the listening environment. MultEQ® uses the measurements from this position to calculate speaker distance, level, polarity, and the optimum crossover value for the subwoofer.

See overleaf

Make the Optimal Speaker Settings, and Correct the Room Acoustics (Audyssey™ Auto Setup)


NOTE

- Loud test sounds may be played during Audyssey MultEQ® automatic speaker setup. This is part of normal operation. If there is background noise in room, these test signals will increase in volume.
- Do not stand between the speakers and setup microphone or allow obstacles in the path while the measurements are being made. This will cause inaccurate readings.
- Make the room as quiet as possible. Background noise can disrupt the room measurements. Close windows, silence cell phones, televisions, radios, air conditioners, fluorescent lights, home appliances, light dimmers, or other devices as measurements may be affected by these sounds.
Cell phones should be placed away from all audio electronics during the measurement process as Radio Frequency Interference (RFI) may cause measurement disruptions (even if the cell phone is not in use).
- Operating **MASTER VOLUME** during the measurements will cancel the measurements.

1 Connect the Included Setup Microphone

📖 page 29 of [The original version] Operating Instructions

2 Audyssey Auto Setup Preparations

 around items indicate the default setting.

STEP1 Preparation

Perform the following settings if adjustments, etc., are required for the speaker environment you're using.
If you do not need to perform the following settings, or have already completed them, select "Auto Setup Start" and then press **ENTER**. Proceed to "[STEP2]".

Change the Amplifier Assignment (Amp Assign)

The signal output from the SURR.BACK/AMP ASSIGN speaker terminal of the AVR-3310CI can be switched to match your speaker environment (📖 page 8 "Amp Assign").


1 Press $\Delta \nabla$ to select "Amp Assign", then press **ENTER**.



2 Press $\triangleleft \triangleright$ to select Amp Assign Mode, then press **RETURN**.

Normal	: The surround back channel audio signals are output.
ZONE2	: The ZONE2 audio signals are output.
ZONE3	: The ZONE3 audio signals are output.
ZONE2/3-MONO	: The ZONE2 / ZONE3 monaural audio signals are output.
Front A Bi-Amp	: The bi-amp audio signals are output. Set this for bi-amp playback of the front A speakers.
Front B Bi-Amp	: The bi-amp audio signals are output. Set this for bi-amp playback of the front B speakers.
Front Height	: The front height channel audio signals are output.

Front Wide : The front wide channel audio signals are output.

 indicates functions added by upgrading.



- When you are using surround back speakers with ZONE2/ZONE3, set to "ZONE2" or "ZONE3".
- You can set in the same way as described in "Amp Assign" on page 8.

NOTE

Since "Amp Assign" of AVR-3310CI is set to "ZONE2" by default, audio is not output from the surround back speakers. When using the surround back speakers with MAIN ZONE, change the "Amp Assign" setting to "Normal".

Set the channel to be measured (Channel Select)

📖 page 30 of [The original version] Operating Instructions

3 Perform Audyssey Auto Setup

📖 page 30 of [The original version] Operating Instructions



Making Detailed Settings (Manual Setup)



For details on how to select, set and cancel settings for each menu, see “GUI Menu Operation” (page 26 of [The original version] Operating Instructions).



When upgrading, contents of “Speaker Setup” are modified.
For setting “Speaker Setup”, make settings by referring to this manual but not [The original version] Operating Instructions.



Making the Speaker Settings (Speaker Setup)






Default settings are underlined.




Perform when setting the speakers manually or when changing settings made in Audyssey Auto Setup.

Setting items	Setting contents
Amp Assign Sets the signal output to the speaker connected to the SURR. BACK/AMP ASSIGN terminals.	<p>Normal : The surround back channel audio signals are output.</p> <p>ZONE2 : The ZONE2 audio signals are output.</p> <p>ZONE3 : The ZONE3 audio signals are output.</p> <p>ZONE2/3-MONO : The ZONE2 / ZONE3 monaural audio signals are output.</p> <p>Front A Bi-Amp : The bi-amp audio signals are output. Set this for bi-amp playback of the front A speakers.</p> <p>Front B Bi-Amp : The bi-amp audio signals are output. Set this for bi-amp playback of the front B speakers.</p> <p>Front Height : The front height channel audio signals are output.</p> <p>Front Wide : The front wide channel audio signals are output.</p> <p> Since “Amp Assign” of AVR-3310CI is set to “ZONE2” by default, audio is not output from the surround back speakers. When using the surround back speakers with MAIN ZONE, change the “Amp Assign” setting to “Normal”.</p>



Setting items	Setting contents
Speaker Configuration Select speaker configuration and size (bass reproduction capability).	<p>Front : Set the front speaker size.</p> <ul style="list-style-type: none"> • Large : Use of a large speaker that can adequately playback low frequencies. • Small : Use of a small speaker that has inadequate playback capacity for low frequencies. <p> When “Subwoofer” is set to “No”, “Front” can automatically set to “Large”.</p> <p>• When “Front” is set to “Small”, “Center”, “Surround”, “Surround Back”, “Front Height” and “Front Wide” can not be set to “Large”.</p> <p>Center : Set the presence and size of the center speaker.</p> <ul style="list-style-type: none"> • Large : Use of a large speaker that can adequately playback low frequencies. • Small : Use of a small speaker that has inadequate playback capacity for low frequencies. • None : Select when a center speaker is not connected. <p> “Large” is not displayed when “Front” is set to “Small”.</p> <p>Subwoofer : Set the presence of a subwoofer.</p> <ul style="list-style-type: none"> • Yes : Use a subwoofer. • No : Select when a subwoofer is not connected. <p> When “Front” is set to “Small”, “Subwoofer” can automatically set to “Yes”.</p> <p>Surround : Set the presence and size of the surround speakers.</p> <ul style="list-style-type: none"> • Large : Use of a large speaker that can adequately playback low frequencies. • Small : Use of a small speaker that has inadequate playback capacity for low frequencies. • None : Select when the surround speakers are not connected. <p> When “Surround” is set to “Large”, “Surround Back”, “Front Height” and “Front Wide” can be set to “Large”.</p> <p>• When “Surround” is set to “None”, “Surround Back”, “Front Height” and “Front Wide” can automatically set to “None”.</p>

Making Detailed Settings (Manual Setup)

Setting items	Setting contents
Speaker Configuration (Continued)	<p>Surround Back : Set the presence, size and number of surround back speakers.</p> <ul style="list-style-type: none"> • Large : Use of a large speaker that can adequately playback low frequencies. • Small : Use of a small speaker that has inadequate playback capacity for low frequencies. • None : Select when the surround back speakers are not connected. <p>• 2spkrs : Use two surround back speakers.</p> <p>• 1spkr : Use only one surround back speaker. When you select this setting, connect the surround back speaker to the left (L) channel.</p> <p> When the “Amp Assign” setting (page 8) is other than “Normal”, you cannot make the “Surround Back” setting.</p> <p>• Even when the Surround Back Speaker setting is other than “None”, sound may not be emitted from the surround back speaker, depending on the playback source. In this case, “Surround Parameters” – “Surround Back” setting other than “OFF” (page 12).</p> <p>Front Height : Set the presence and size of the front height speakers.</p> <ul style="list-style-type: none"> • Large : Use of a large speaker that can adequately playback low frequencies. • Small : Use of a small speaker that has inadequate playback capacity for low frequencies. • None : Select when the front height speakers are not connected. <p> When the “Amp Assign” setting (page 8) is other than “Front Height”, you cannot make the “Front Height” setting.</p> <p>Front Wide : Set the presence and size of the front wide speakers.</p> <ul style="list-style-type: none"> • Large : Use of a large speaker that can adequately playback low frequencies. • Small : Use of a small speaker that has inadequate playback capacity for low frequencies. • None : Select when the front wide speakers are not connected. <p> When the “Amp Assign” setting (page 8) is other than “Front Wide”, you cannot make the “Front Wide” setting.</p>

Setting items	Setting contents
Bass Setting Settings for subwoofer and LFE signal range playback.	<p>Subwoofer Mode : Select low range signals to be reproduced by subwoofer.</p> <ul style="list-style-type: none"> • LFE : The low range signal of the channel set to “Small” speaker size is added to the LFE signal output from the subwoofer. • LFE+Main : The low range signal of all channels is added to the LFE signal output from the subwoofer. <p> This can be set when “Speaker Configuration” – “Subwoofer” (page 8) is set to “Yes”.</p> <ul style="list-style-type: none"> • Play music or a movie source and select the mode offering the strongest bass. • Select “LFE+Main” if you want the bass signals to always be produced from the subwoofer. <p>LPF for LFE : Set LFE signal playback range.</p> <ul style="list-style-type: none"> • 80Hz / 90Hz / 100Hz / 110Hz / 120Hz / 150Hz / 200Hz / 250Hz
Distance Set distance from listening position to speakers. Measure beforehand the distance from the listening position to each speaker.	<p>Unit : Set the unit of distance.</p> <ul style="list-style-type: none"> • Feet • Meters <p>Step : Set the minimum variable width of the distance.</p> <ul style="list-style-type: none"> • 1ft / 0.1ft • 0.1m / 0.01m <p>Front L / Front R / Center / Subwoofer / Surround L / Surround R / S. Back L* / S. Back R* / Front Height L / Front Height R / Front Wide L / Front Wide R : Select the speaker.</p> <p>*: When the “Speaker Configuration” – “Surround Back” setting (page 9) is set to “1spkr”, “S. Back” is displayed.</p> <ul style="list-style-type: none"> • 0.0ft ~ 60.0ft / 0.00m ~ 18.00m : Set the distance. <p> Speakers set to “None” in “Speaker Configuration” (page 8) are not displayed.</p> <ul style="list-style-type: none"> • The speakers that can be selected differ depending on the “Amp Assign” (page 8) and “Speaker Configuration” (page 8) settings. • Default settings : Front / Center / Subwoofer / Front Height / Front Wide : 12.0 ft (3.60 m) Surround / Surround Back : 10.0 ft (3.00 m) • Set the difference in the distance between the speakers to less than 20 feet (6.0 meters). <p>Default : Reset all distance settings to factory default.</p> <ul style="list-style-type: none"> • Yes : Reset to the defaults. • No : Do not reset to the defaults. <p> When you select “Default” and press ENTER, the “Default Setting?” prompt is displayed. Select either “Yes” or “No”, and press ENTER.</p>

Making Detailed Settings (Manual Setup)

Setting items	Setting contents
Channel Level Set the volume of the test tone to be the same when it is output from each speaker.	<p>Test Tone Start : Output test tone.</p> <ul style="list-style-type: none"> • Front L / Front Height L / Center / Front Height R / Front R / Front Wide R / Surround R / S. Back R* / S. Back L* / Surround L / Front Wide L / Subwoofer : Select the speaker. * : When the "Speaker Configuration" – "Surround Back" setting (page 9) is set to "1spkr", "S. Back" is displayed. • -12.0dB ~ +12.0dB (0.0dB) : Adjust the volume. <p></p> <ul style="list-style-type: none"> • Speakers set to "None" in the "Speaker Configuration" (page 8) settings are not displayed. • When ◀ is pressed while the subwoofer volume is set to "-12 dB", the "Subwoofer" setting switches to "OFF". • When a headphones jack is inserted in the PHONES terminal of the AVR-3310CI, the "Channel Level" is not displayed. • You can also press [CHANNEL LEVEL] to set (page 79 of [The original version] Operating Instructions "Adjust the Volume of the Different Speakers"). <p>Default : Reset all channel level settings to factory default.</p> <ul style="list-style-type: none"> • Yes : Reset to the defaults. • No : Do not reset to the defaults.
Crossover Frequency Outputs at below set frequency, each speaker's bass signal output from the subwoofer. Set this according to the low frequency reproduction capabilities of the speakers you are using.	<p>40Hz / 60Hz / 80Hz / 90Hz / 100Hz / 110Hz / 120Hz / 150Hz / 200Hz / 250Hz : Set the crossover frequency.</p> <p>Advanced : Specify crossover frequency for each speaker.</p> <ul style="list-style-type: none"> • Front / Center / Surround / Surround Back / Front Height / Front Wide : Select the speaker. • 40Hz / 60Hz / 80Hz / 90Hz / 100Hz / 110Hz / 120Hz / 150Hz / 200Hz / 250Hz : Set the crossover frequency. <p></p> <ul style="list-style-type: none"> • Can be set when the "Speaker Configuration" – "Subwoofer" (page 8) setting is "Yes", or when you have a speaker that is set to "Small". • Always set the crossover frequency to "80 Hz". When using small speakers, however, we recommend setting the crossover frequency to a higher frequency. • For speakers set to "Small", sound below the crossover frequency is cut from the sound output. The cut bass sound is output from the subwoofer or front speakers. • The speakers that can be set when "Advanced" is selected differ according to the "Subwoofer Mode" setting (page 9). <ul style="list-style-type: none"> • When "LFE" is selected, speakers set to "Small" at "Speaker Configuration" can be set. If the speakers are set to "Large", "Full Band" is displayed and the setting cannot be made. • If set to "LFE+Main", this setting can be made regardless of the speaker size.

Setting items	Setting contents
Front Speaker Setup Set the front speakers to use for every surround mode.	<p>Setting : Choose the method for setting the front speakers.</p> <ul style="list-style-type: none"> • Normal : The front speakers are set using the <FRONT SPEAKERS>. • Custom : The front speakers used for the different playing modes are set in advance. <p>2CH DIRECT/STEREO : The front speakers used in the direct, stereo and pure direct play modes (2 channel) are set in advance.</p> <ul style="list-style-type: none"> • A : Front speaker A is used. • B : Front speaker B is used. • A+B : Both front speakers A and B are used. <p>MULTI CH : The front speakers used in modes other than the direct, stereo and pure direct play modes (2 channel) are set in advance.</p> <ul style="list-style-type: none"> • A : Front speaker A is used. • B : Front speaker B is used. • A+B : Both front speakers A and B are used. <p>NOTE</p> <ul style="list-style-type: none"> • When set to "Custom", <FRONT SPEAKERS> does not operate. • The front speaker setting stored for the "Quick Select" function is given priority.

Playback



Adjusting the Sound and Picture Quality (Audio/Video Adjust)



For details on how to select, set and cancel settings for each menu, see “GUI Menu Operation” (page 26 of [The original version] Operating Instructions).



When upgrading, contents of “Audio Adjust” are modified.
For setting “Audio Adjust”, make settings by referring to this manual but not [The original version] Operating Instructions.





Adjusting the Sound (Audio Adjust)






Default settings are underlined.


The sound being played in the surround mode can be adjusted to your liking.
The items (parameters) that can be adjusted depend on the signal being input and the currently set surround mode. For details on the adjustable parameters, see “Surround Modes and Parameters” (page 17).

Setting items	Setting contents
Surround Parameters Adjust surround sound parameters.	Mode : Set the play modes for the different surround modes. <input type="checkbox"/> In the PLIIx or PLII mode Cinema : Surround sound mode optimized for movie sources. Music : Surround sound mode optimized for music sources. Game : Surround sound mode optimized for games. Pro Logic : Dolby Pro Logic playback mode (PLII mode only). <input type="checkbox"/> In the PLIIz mode Height : Dolby PLIIz Height playback mode. <input type="checkbox"/> In the DTS NEO:6 mode Cinema : Surround sound mode optimized for movie sources. Music : Surround sound mode optimized for music sources.  • When “Surround Parameters” – “Front Height” (page 12) is set to “ON”, the “Height” mode is set automatically. • The “Music” mode is also effective for movie sources including a lot of stereo music. • The “Cinema” and “Music” modes can also be set by pressing [CINEMA] or [MUSIC].






Setting items	Setting contents
Surround Parameters (Continued)	Cinema EQ : Soften the treble range of movie soundtracks for better understanding. • OFF : “Cinema EQ” is not used. • ON : “Cinema EQ” is used. DRC : Compress dynamic range (difference between loud and soft sounds).w • Auto : Automatic dynamic range compression on/off control according to source. This can be set in the Dolby TrueHD mode. • Low / Middle / High : These set the compression level. • OFF : Dynamic range compression always off. D.COMP : Compress dynamic range (difference between loud and soft sounds). • OFF : Turn dynamic range compression off. • Low / Middle / High : These set the compression level. LFE : Adjust the low-frequency effects level (LFE). • -10dB ~ 0dB  For proper playback of the different sources, we recommend setting to the values below. • Dolby Digital sources : “0dB” • DTS movie sources : “0dB” • DTS music sources : “-10dB” Center Image : Assign center channel signal to front left and right channels for wider sound. • 0.0 ~ 1.0 (0.3) Panorama : Assign front L/R signal also to surround channels, for wider sound. • OFF : Do not set. • ON : Set. Dimension : Shift sound image center to front or rear, to adjust playback balance. • 0 ~ 6 (3) Center Width : Assign center channel signal to front left and right channels for wider sound. • 0 ~ 7 (3)


Adjusting the Sound and Picture Quality (Audio/Video Adjust)





Setting items	Setting contents
Surround Parameters (Continued)	Delay Time : Adjust delay time to control sound stage size. • 0ms ~ 300ms (30ms)
	Effect Level : Adjust effect signal level. • 1 ~ 15 (10)  Set to a lower level if the positioning and sense of phase of the surround signals seems unnatural.
	Room Size : Determine size of acoustic environment. • Small : Simulate acoustics of a small room. • Medium small : Simulate acoustics of a medium-small room. • Medium : Simulate acoustics of a medium room. • Medium large : Simulate acoustics of a medium-large room. • Large : Simulate acoustics of a large room. NOTE "Room Size" does not indicate the size of the room in which sources are played.
	Front Height : Set the front height channel. • ON : Use the front height channel. • OFF : Do not use the front height channel.  • "Front Height" is not displayed with the settings listed below. • When the "Amp Assign" setting (page 8) is set to something other than "Front Height" • When the "Speaker Configuration" – "Front Height" setting (page 9) is set to "None" • "Front Height" cannot be set if the HD Audio source being played includes a front height channel. In this case, the Front height channel is played back without decoding in PLIIz mode, using the input signal. • "Front Height" can be set by pressing [SPEAKERS] in DENON original surround mode (DSP SIMULATION) (page 2).
	Front Wide : Set the front wide channel. • ON : Use the front wide channel. • OFF : Do not use the front wide channel.  • "Front Wide" is not displayed with the settings listed below. • When the "Amp Assign" setting (page 8) is set to something other than "Front Wide" • When the "Speaker Configuration" – "Front Wide" setting (page 9) is set to "None". • "Front Wide" can be set by pressing [SPEAKERS] in DENON original surround mode (DSP SIMULATION) (page 2).








Setting items	Setting contents
Surround Parameters (Continued)	AFDM (Auto flag detect mode) : Detects the source's surround back channel signal and sets the optimum surround mode automatically. • OFF : Do not set. • ON : Set. [Example] Playing Dolby Digital software (with EX flag) • When "AFDM" is set to "ON", the surround mode is automatically set to the DOLBY D + PLIIx C mode. • To play in the DOLBY DIGITAL EX mode, set "AFDM" to "OFF" and "Surround Back" to "MTRX ON".  • Some Dolby Digital EX sources do not include EX flags. If the playback mode does not switch automatically even when "AFDM" is set to "ON", set "Surround Back" to "MTRX ON" or "PLIIx CINEMA". • If the setting in "Speaker Configuration" – "Surround Back" (page 9) is "None", "Surround Back" is not displayed.
	Surround Back : Sets the method of generating of the surround back channel. <input type="checkbox"/> For 2-channel sources • ON : The surround back channel is used. • OFF : No signal is played from the surround back channels. <input type="checkbox"/> For multi-channel sources Set the decoding method for the surround back channel. DSCRT ON : Play the surround back signals included in the 7.1-channel source. MTRX ON : Generate and play the surround back signals from the surround channel signals. ES MTRX *1 : Generate and play the surround back signals from the surround channel signals of the DTS source. ES DSCRT *2 : Play the surround back signals included in the 6.1-channel DTS source. PLIIx CINEMA *3 : Generate and play the surround back signals by decoding the signals in the Dolby Pro Logic IIx Cinema mode. PLIIx MUSIC : Generate and play the surround back signals by decoding the signals in the Dolby Pro Logic IIx Music mode. OFF : The surround back channel is not played. *1 : This can be selected when playing DTS sources. *2 : This can be selected when playing DTS sources including a signal to identify discrete 6.1-channel signals. *3 : This can be selected when "Speaker Configuration" – "Surround Back" (page 9) is set to "2spkr".

Adjusting the Sound and Picture Quality (Audio/Video Adjust)




Setting items	Setting contents
Surround Parameters (Continued)	 <ul style="list-style-type: none">• This can also be set by pressing STANDARD.• If the source being played contains a surround back signal, the decoder type is automatically selected by the AFDM function. Set "AFDM" to "OFF" to switch to your preferred decoder.• If the setting in "Speaker Configuration" – "Surround Back" (👉 page 9) is "None", "Surround Back" is not displayed. Subwoofer Att. : Attenuate subwoofer level when using EXT. IN input. <ul style="list-style-type: none">• ON : Set.• OFF : Do not set. Usually use in this mode.  Set this to "ON" if the subwoofer channel level seems too high when playing audio signal.
	Subwoofer : Turn subwoofer output on and off. <ul style="list-style-type: none">• ON : The subwoofer is used.• OFF : The subwoofer is not used. Default : Restores all the surround parameter settings to their defaults. <ul style="list-style-type: none">• No : Do not reset to the defaults.• Yes : Reset to the defaults.
Tone Adjust the tonal quality of the sound.	Tone Control : Sets the tone control function ON and OFF. <ul style="list-style-type: none">• ON : Allow tone adjustment (treble, bass).• OFF : Playback without tone adjustment.  <ul style="list-style-type: none">• This can be set when "Dynamic EQ" (👉 page 14) is set to "OFF".• The tone cannot be adjusted in the direct mode. Bass : Adjust low frequency range (bass). <ul style="list-style-type: none">• -6dB ~ +6dB  This can be set when "Tone Control" (👉 page 13) is set to "ON".
	Treble : Adjust high frequency range (treble). <ul style="list-style-type: none">• -6dB ~ +6dB  This can be set when "Tone Control" (👉 page 13) is set to "ON".


Setting items	Setting contents
Audyssey Settings Set Audyssey MultEQ®, Audyssey Dynamic EQ® and Audyssey Dynamic Volume™.	MultEQ : Corrects both time and frequency response problems in the listening area. <ul style="list-style-type: none">• Audyssey : Optimize the frequency response of all speakers.• Audyssey Byp.L/R : Optimize frequency response of speakers except front L and R speakers.• Audyssey Flat : Optimize frequency response of all speakers to flat response.• Manual : Apply frequency response set with "Manual EQ" (👉 page 16).• OFF : Turn "MultEQ" equalizer off.  <ul style="list-style-type: none">• "Audyssey", "Audyssey Byp. L/R" and "Audyssey Flat" can be selected after Audyssey Auto Setup has been performed. "Audyssey" is automatically selected after performing Audyssey Auto Setup. "When "Audyssey", "AudysseyByp.L/R" or "AudysseyFlat" is selected, "AUDYSSEY MULTEQ" lights.• After running Audyssey Auto Setup, if the Speaker Configuration, Distance, Channel Level, and Crossover Frequency have changed without increasing the number of speakers measured, only "AUDYSSEY MULTEQ" lights.• If "Dynamic EQ" or "Dynamic Volume" is set to "ON" when "MultEQ" is set to either "OFF" or "Manual", "MultEQ" is automatically set to "Audyssey".• You can also press MULTEQ to set.
NOTE If you have not performed Auto Setup, or if you change the speaker settings after performing Auto Setup, you may not be able to select Dynamic EQ/Dynamic Volume, and "Run Audyssey" may be displayed. In this case, either perform Audyssey Auto Setup over again or perform "Restore" (👉 page 33 of [The original version] Operating Instructions) to return to the settings after Audyssey Auto Setup was run.	NOTE <ul style="list-style-type: none">• "MultEQ" and "Manual EQ" cannot be selected when "EQ Customize" is set to "Not Used" (👉 page 38 of [The original version] Operating Instructions).• When using headphones, "MultEQ" is set to "OFF".

Setting items	Setting contents
Audyssey Settings (Continued)	<p>Dynamic EQ : Solves the problem of deteriorating sound quality as volume is decreased by taking into account human perception and room acoustics.</p> <ul style="list-style-type: none"> • ON : Use the Dynamic EQ equalizer. • OFF : Do not use the Dynamic EQ equalizer. <p></p> <ul style="list-style-type: none"> • After performing "Audyssey Auto Setup", the "Dynamic EQ" setting automatically becomes "ON". • " " is displayed when set to "ON". • When "MultEQ" is set to "OFF" or "Manual", "Dynamic EQ" is automatically set to "OFF". • If "Dynamic Volume" is set to "ON", "Dynamic EQ" is automatically set to "ON". • When you set "Dynamic EQ" to "ON", "Tone Control" is switched "OFF". • You can also press [DYNAMIC EQ] to set. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Dynamic EQ : ON/Volume : OFF → Dynamic EQ / Volume : OFF</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  "Red" </div> <div style="text-align: center;">  "OFF" </div> </div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">About Dynamic EQ</p> <p>Audyssey Dynamic EQ® solves the problem of deteriorating sound quality as volume is decreased by taking into account human perception and room acoustics. Audyssey Dynamic EQ works in tandem with Audyssey MultEQ® to provide well-balanced sound for every listener at any volume level.</p> </div>




Setting items	Setting contents
Audyssey Settings (Continued)	<p>Reference Level Offset : Audyssey Dynamic EQ® is referenced to the standard film mix level. It makes adjustments to maintain the reference response and surround envelopment when the volume is turned down from 0 dB. However, film reference level is not always used in music or other non-film content. The Dynamic EQ Reference Level Offset provides three offsets from the film level reference (5 dB, 10 dB, and 15 dB) that can be selected when the mix level of the content is not within the standard.</p> <ul style="list-style-type: none"> • 0dB (Film Ref) : This is the default setting and should be used when listening to movies. • 5dB : Select this setting for content that has a very wide dynamic range, such as classical music. • 10dB : Select this setting for jazz or other music that has a wider dynamic range. This setting should also be selected for TV content as that is usually mixed at 10 dB below film reference. • 15dB : Select this setting for pop/rock music or other program material that is mixed at very high listening levels and has a compressed dynamic range. <p></p> <p>Setting is enabled when "Dynamic EQ" is "ON" ( page 14).</p> <p>Dynamic Volume : Solves the problem of large variations in volume level between TV, movies and other content (between quiet passages and loud passages, etc.) by automatically adjusting to the user's preferred volume setting.</p> <ul style="list-style-type: none"> • ON : Use the "Dynamic Volume" equalizer. The Dynamic Volume effect will be at the level of the "Setting" ( page 15). • OFF : Do not use the "Dynamic Volume" equalizer. <p></p> <ul style="list-style-type: none"> • " " is displayed when set to "ON". • When "MultEQ" is set to "OFF", "Dynamic Volume" is automatically set to "OFF". • You can also press DYNAMIC VOLUME to set. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">Operation on the main unit</p> <p>Dynamic EQ / Volume : ON → Dynamic EQ : ON / Volume : OFF</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  "Green" </div> <div style="text-align: center;">  "Red" </div> </div> <p style="text-align: center;">Dynamic EQ / Volume : OFF ←</p> </div>


Adjusting the Sound and Picture Quality (Audio/Video Adjust)

Setting items	Setting contents
Audyssey Settings (Continued)	Operation on the main remote control unit
	<div>Dynamic EQ / Volume : ON → Dynamic EQ : ON / Volume : OFF</div> <div><div> "Green"</div><div> "Red"</div></div>
	About Dynamic Volume <p>Audyssey Dynamic Volume™ solves the problem of large variations in volume level between television programs, commercials, and between the soft and loud passages of movies.</p> <p>Audyssey Dynamic EQ® is integrated into Dynamic Volume so that as the playback volume is adjusted automatically, the perceived bass response, tonal balance, surround impression, and dialog clarity remain the same.</p> <p>Setting : Set "Dynamic Volume" equalizer effect.</p> <ul style="list-style-type: none">• Midnight : High setting affects volume the most, causing all sounds to be of equal loudness.• Evening : Middle setting prevents loud and soft sounds from being much louder and softer respectively than average sounds.• Day : Low setting provides the least adjustments to the loudest and softest of sounds. <p> Can be set when "Dynamic Volume" is set to "ON".</p>

Setting items	Setting contents
DSX Soundstage Adjust Audyssey DSX™ setting and sound stage parameters.	Audyssey DSX : Provides more immersive surround sound by adding the new channels. <ul style="list-style-type: none">• ON : Set Audyssey DSX to expand surround.• OFF : Do not set Audyssey DSX.
	Stage Width : Adjust sound stage width when using front wide speakers. <ul style="list-style-type: none">• -10 ~ 0
	Stage Height : Adjust sound stage height when using front height speakers. <ul style="list-style-type: none">• -10 ~ 0 <p></p> <ul style="list-style-type: none">• "Audyssey DSX" can be set when you are using front height speakers or front wide speakers.• "Audyssey DSX" is only valid when using a center speaker.• "Audyssey DSX" is valid when surround mode is STANDARD mode other than PLIIz Height.• "Audyssey DSX" can be operated by [SPEAKERS].• "DSX Soundstage" cannot be configured if the HD Audio source being played includes Front height and Front wide channels. In this case, the respective channels are played back using the input signals. <div>About Audyssey Dynamic Surround Expansion (DSX)<p>Audyssey DSX™ is a scalable surround expansion system that adds new channels to improve the surround impression. Based on research in human hearing Audyssey DSX adds a pair of Wide channels in the front because that information is critical in the rendering of a realistic soundstage.</p><p>Audyssey DSX then adds a pair of Height channels above the main front channels to reproduce the next most important acoustical and perceptual cues related to soundstage depth. In addition to creating these new channels, Audyssey DSX applies Surround Envelopment Processing to enhance the blend between the front and side/back surround channels. The result is a much more seamless and enveloping home theater experience.</p></div>

Adjusting the Sound and Picture Quality (Audio/Video Adjust)

Setting items	Setting contents
Manual EQ Use the graphic equalizer to adjust the tone of each speaker.	Adjust CH : Correct the tone of each speaker. ① Select the speaker tone adjustment method. All : Adjust the tone of all speakers together. L/R : Adjust the tone of left and right speakers together. Each : Adjust the tone of each speaker. ② Select the speaker. ③ Select the adjustment frequency band. 63Hz / 125Hz / 250Hz / 500Hz / 1kHz / 2kHz / 4kHz / 8kHz / 16kHz ※ Select the speakers you want to adjust when "L/R" or "Each" is selected. ④ Adjust the level. -20.0dB ~ +6.0dB (0.0dB)  Can be set when the "MultEQ" setting (page 13) is "Manual". Base Curve Copy : Copy "Audyssey Flat" curve from MultEQ. Yes : Copy. No : Do not copy.  "Base Curve Copy" is displayed after Audyssey Auto Setup procedure has been performed. Default : Reset the settings to the default values. • Yes : Reset. • No : Do not Reset.
RESTORER This function restores compressed audio signals to how they were before compression and corrects the sense of volume of the bass and treble to obtain richer playback sound.	OFF : Do not use RESTORER. Mode 1 (RESTORER 64) : Optimized mode for compressed sources with very weak highs. Mode 2 (RESTORER 96) : Apply suitable bass and treble boost for all compressed sources. Mode 3 (RESTORER HQ) : Optimized mode for compressed sources with normal highs.  <ul style="list-style-type: none"> This can be set with analog signals or when a PCM signal (fs = 44.1/48 kHz) is input. This cannot be set when the input mode is set to "EXT. IN" or when the surround mode is set to "DIRECT". The default setting for "iPod" and "NET/USB" are "Mode 3". All others are set to "OFF". When set to something other than "OFF", "RSTR" is displayed. This can also be set by pressing RESTORER during playback. <pre> graph LR OFF --> Mode1["Mode 1 (RESTORER 64)"] Mode1 --> Mode2["Mode 2 (RESTORER 96)"] Mode2 --> Mode3["Mode 3 (RESTORER HQ)"] Mode3 --> OFF </pre>

Setting items	Setting contents
RESTORER (Continued)	About the RESTORER function <ul style="list-style-type: none"> Such compressed audio formats as MP3, WMA (Windows Media Audio) and MPEG-4 AAC reduce the amount of data by eliminating signal components that are hard for the human ear to hear. The RESTORER function generates the signals eliminated upon compression, restoring the sound to conditions near those of the original sound before compression. It also corrects the sense of volume of the bass to obtain richer sound with compressed audio signals. This is displayed on the GUI menu and can be set when the input source is set to "HD Radio" or "NET/USB", or when analog signals (including FM/AM signals) or PCM signals (fs = 44.1/48 kHz) are input.
Audio Delay While viewing video, manually adjust the time to delay audio output.	0ms ~ 200ms  <ul style="list-style-type: none"> This can be set within the range of 0 to 100 ms when "Auto Lip Sync" is set to "ON" and when a TV compatible with Auto Lipsync is connected. Store "Audio Delay" for each input source. You can also press <AUDIO DELAY> to set.

Other Information

Surround

Surround Modes and Parameters

Surround Mode	Signals and adjustability in the different modes															
	Channel output								Parameter (default values are shown in parentheses)							
	Front L/R	Center	Surround L/R	Surround Back L/R	Subwoofer	Front Wide L/R	Front Height L/R	D. COMP *1	DRC *2	LFE *3	AFDM *1	Surround Back	Cinema EQ.	Mode	Room Size	Effect Level
PURE DIRECT, DIRECT (2ch)	○	×	×	×	◎*4	×	×	○ (OFF)	○ (Auto)	○ (0 dB)	×	×	×	×	×	×
MULTI CH DIRECT	○	◎	◎	◎	◎	×	×	×	×	○ (0 dB)	○ (ON)	○	×	×	×	×
STEREO	○	×	×	×	◎	×	×	○ (OFF)	○ (Auto)	○ (0 dB)	×	×	×	×	×	×
EXT. IN	○	◎	◎	◎	◎	×	×	×	×	×	×	×	×	×	×	×
MULTI CH IN	○	◎	◎	◎	◎	◎ (NOTE4)	◎ (NOTE4)	×	×	○ (0 dB)	○ (ON)	○	○ (OFF)	×	×	×
DOLBY PRO LOGIC IIz	○	◎	◎	×	◎	×	◎	○ (OFF)	○ (Auto)	○ (0 dB)	×	×	○ (OFF)	○ (Height)	×	×
DOLBY PRO LOGIC IIx	○	◎	◎	◎	◎	×	×	○ (OFF)	○ (Auto)	×	×	○	○ (NOTE1)	○ (Cinema)	×	×
DOLBY PRO LOGIC II	○	◎	◎	×	◎	◎ (NOTE4)	◎ (NOTE4)	○ (OFF)	○ (Auto)	×	×	○	○ (NOTE2)	○ (Cinema)	×	×
DTS NEO:6	○	◎	◎	◎	◎	◎ (NOTE4)	◎ (NOTE4)	○ (OFF)	○ (Auto)	×	×	○	○ (NOTE1)	○ (Cinema)	×	×
DOLBY DIGITAL	○	◎	◎	◎	◎	◎ (NOTE4)	◎ (NOTE3)	○ (OFF)	×	○ (0 dB)	○ (ON)	○	○ (OFF)	×	×	×
DOLBY DIGITAL Plus	○	◎	◎	◎	◎	◎ (NOTE4)	◎ (NOTE3)	○ (OFF)	×	○ (0 dB)	○ (ON)	○	○ (OFF)	×	×	×
DOLBY TrueHD	○	◎	◎	◎	◎	◎ (NOTE4)	◎ (NOTE3)	×	○ (Auto)	○ (0 dB)	○ (ON)	○	○ (OFF)	×	×	×
DTS SURROUND	○	◎	◎	◎	◎	◎ (NOTE4)	◎ (NOTE3)	○ (OFF)	×	○ (0 dB)	○ (ON)	○	○ (OFF)	×	×	×
DTS 96/24	○	◎	◎	◎	◎	◎ (NOTE4)	◎ (NOTE3)	○ (OFF)	×	○ (0 dB)	○ (ON)	○	○ (OFF)	×	×	×
DTS-HD	○	◎	◎	◎	◎	◎ (NOTE4)	◎ (NOTE3)	○ (OFF)	×	○ (0 dB)	○ (ON)	○	○ (OFF)	×	×	×
DTS EXPRESS	○	◎	◎	◎	◎	◎ (NOTE4)	◎ (NOTE3)	○ (OFF)	×	○ (0 dB)	○ (ON)	○	○ (OFF)	×	×	×
5CH/7CH STEREO	○	◎	◎	◎	◎	◎ (NOTE6)	◎ (NOTE5)	○ (OFF)	×	○ (0 dB)	×	○	×	×	×	×
ROCK ARENA	○	◎	◎	◎	◎	◎ (NOTE6)	◎ (NOTE5)	○ (OFF)	×	○ (0 dB)	×	○	×	×	○ (Medium)	○ (10)
JAZZ CLUB	○	◎	◎	◎	◎	◎ (NOTE6)	◎ (NOTE5)	○ (OFF)	×	○ (0 dB)	×	○	×	×	○ (Medium)	○ (10)
MONO MOVIE	○	◎	◎	◎	◎	◎ (NOTE6)	◎ (NOTE5)	○ (OFF)	×	○ (0 dB)	×	○	×	×	○ (Medium)	○ (10)
VIDEO GAME	○	◎	◎	◎	◎	◎ (NOTE6)	◎ (NOTE5)	○ (OFF)	×	○ (0 dB)	×	○	×	×	○ (Medium)	○ (10)
MATRIX	○	◎	◎	◎	◎	◎ (NOTE6)	◎ (NOTE5)	○ (OFF)	×	○ (0 dB)	×	○	×	×	×	×
VIRTUAL	○	×	×	×	◎	×	×	○ (OFF)	×	○ (0 dB)	×	×	×	×	×	×

○ : Signal / Adjustable

×

× : No signal / Not adjustable

◎ : Turned on or off by speaker configuration setting

NOTE1 : This parameter is available when the "Mode" is set to "Cinema" (page 11).

NOTE2 : This parameter is available when the "Mode" is set to "Cinema" or "Pro Logic" (page 11).

NOTE3 : This parameter is available when the "Front Height" is set to "ON" or "Audyssey DSX" is set to "ON" (page 12, 15).

NOTE4 : This parameter is available when the "Audyssey DSX" is set to "ON" (page 15).

NOTE5 : This parameter is available when the "Front Height" is set to "ON" (page 12).

NOTE6 : This parameter is available when the "Front Wide" is set to "ON" (page 12).

NOTE:

*1 : When playing Dolby Digital and DTS signals.

*2 : When playing Dolby TrueHD signal.

*3 : When playing Dolby Digital, DTS and DVD-Audio.

*4 : When the "Subwoofer Mode" is set to "LFE+Main" (page 9) only.

Surround

Surround Mode	Signals and adjustability in the different modes														
	Parameter (default values are shown in parentheses)														
	Delay Time	Subwoofer	Front Height	Front Wide	PRO LOGIC II/IIx MUSIC mode only			NEO:6 MUSIC mode only	EXT. IN only	Tone Control (NOTE8)	MultEQ	Dynamic EQ (NOTE9)	Dynamic Volume (NOTE10)	RESTORER (NOTE11)	Audyssey DSX
					Panorama	Dimension	Center Width	Center Image	Subwoofer Att.						
PURE DIRECT, DIRECT (2ch)	×	○	×	×	×	×	×	×	×	×	×	×	×	×	×
MULTI CH DIRECT	×	×	○	×	×	×	×	×	×	×	×	×	×	×	×
STEREO	×	×	×	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	○	×
EXT. IN	×	×	×	×	×	×	×	×	○	×	×	×	×	×	×
MULTI CH IN	×	×	○	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	×	○
DOLBY PRO LOGIC IIz	×	×	○	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	○	×
DOLBY PRO LOGIC IIx	×	×	○	×	○ (OFF)	○ (3)	○ (3)	×	×	○ (OFF)	○ (OFF)	○	○	○	×
DOLBY PRO LOGIC II	×	×	○	×	○ (OFF)	○ (3)	○ (3)	×	×	○ (OFF)	○ (OFF)	○	○	○	○
DTS NEO:6	×	×	×	×	×	×	×	○ (0.3)	×	○ (OFF)	○ (OFF)	○	○	○	○
DOLBY DIGITAL	×	×	○	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	×	○
DOLBY DIGITAL Plus	×	×	○	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	×	○
DOLBY TrueHD	×	×	○	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	×	○
DTS SURROUND	×	×	○	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	×	○
DTS 96/24	×	×	○	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	×	○
DTS-HD	×	×	○	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	×	○
DTS EXPRESS	×	×	○	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	×	○
5CH/7CH STEREO	×	×	○	○	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	○	×
ROCK ARENA	×	×	○	○	×	×	×	×	×	○ (NOTE7)	○ (OFF)	○	○	○	×
JAZZ CLUB	×	×	○	○	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	○	×
MONO MOVIE	×	×	○	○	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	○	×
VIDEO GAME	×	×	○	○	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	○	×
MATRIX	○ (30 ms)	×	○	○	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	○	×
VIRTUAL	×	×	×	×	×	×	×	×	×	○ (OFF)	○ (OFF)	○	○	○	×

○ : Signal / Adjustable

× : No signal / Not adjustable

NOTE7 : BASS +6 dB, TREBLE +4 dB

NOTE8 : Cannot be set when the "Dynamic EQ" (page 14) setting is "ON".

NOTE9 : Cannot be set when the "MultEQ" (page 13) setting is "OFF".

NOTE10 : Cannot be set when the "Dynamic EQ" (page 14) setting is "OFF".

NOTE11 : "RESTORER" can be set for analog or PCM 48 kHz or 44.1 kHz input signals.

Unavailable Functions After Upgrading

When upgrading, the RS-232C connector cannot be used for the DENON RF remote controller.

Connecting Devices

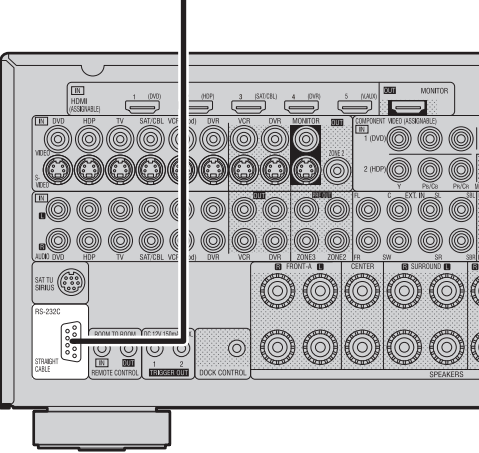
External Controller

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❑ RS-232C connector

When you connect an external control device, you can control the AVR-3310CI with the external control device. Perform the operation below beforehand.

- ① Turn on the AVR-3310CI's power.
- ② Turn off the AVR-3310CI's power from the external controller.
- ③ Check that the AVR-3310CI is in the standby mode.



When upgrading, the DENON RF remote controller cannot be connected.

Set as Necessary

Set this to use the RS-232C connector for the DENON RF remote controller.

"232C Port"



When using the AVR-3310CI in combination with the DENON RF remote controller (RC-7000CI, sold separately) or RF remote receiver (RC-7001RCI, sold separately), two-way communication is enabled. The AVR-3310CI's status information as well as iPod and Internet audio music files can be browsed watching the RF Remote Controller's display. For details, refer to the operating instructions of the respective devices.

NOTE

On the GUI menu, when setting "232C Port" to "2Way Remote", you cannot use the RS-232C Connector as an external controller.



Making Detailed Settings (Manual Setup)



Making Other Settings (Option Setup)



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When upgrading, this setting cannot be selected.

Setting items	Setting contents
232C Port Set when using an external controller or two-way remote control connected to the RS-232C terminal.	Serial Control : Set when using an external controller. 2Way Remote : Set when using a 2-way remote control unit. When using a DENON two-way remote control (RC-7000CI or RC-7001RCI, sold separately), set to "2Way Remote". NOTE When setting to "2Way Remote", you can not use the RS-232C connector as an external controller.

Specifications

Audio section

• Power amplifier

Rated output:

Front:
120 W + 120 W (8 Ω/ohms, 20 Hz ~ 20 kHz with 0.05 % T.H.D.)
160 W + 160 W (6 Ω/ohms, 1 kHz with 0.7 % T.H.D.)

Center:
120 W (8 Ω/ohms, 20 Hz ~ 20 kHz with 0.05 % T.H.D.)
160 W (6 Ω/ohms, 1 kHz with 0.7 % T.H.D.)

Surround:
120 W + 120 W (8 Ω/ohms, 20 Hz ~ 20 kHz with 0.05 % T.H.D.)
160 W + 160 W (6 Ω/ohms, 1 kHz with 0.7 % T.H.D.)

Surround back:
120 W + 120 W (8 Ω/ohms, 20 Hz ~ 20 kHz with 0.05 % T.H.D.)
160 W + 160 W (6 Ω/ohms, 1 kHz with 0.7 % T.H.D.)

Front height / Front wide:
120 W + 120 W (8 Ω/ohms, 20 Hz ~ 20 kHz with 0.05 % T.H.D.)
160 W + 160 W (6 Ω/ohms, 1 kHz with 0.7 % T.H.D.)

Dynamic power:

130 W x 2ch (8 Ω/ohms)

180 W x 2ch (4 Ω/ohms)

Output connectors:

Center, Surround, Surround back 6 ~ 16 Ω/ohms

Front: A or B 6 ~ 16 Ω/ohms

A + B 8 ~ 16 Ω/ohms

• Analog

Input sensitivity / Input impedance:

200 mV / 12 kΩ/kohms (except for EXT. IN (SW, S, SB), CD, PHONO, V. AUX)

200 mV / 47 kΩ/kohms (EXT. IN (SW, S, SB), CD, PHONO, V. AUX)

10 Hz ~ 100 kHz +1, -3 dB (DIRECT mode)

Frequency response:

S/N: 102 dB (IHF-A weighted, DIRECT mode)

Distortion: 0.005 % (20 Hz ~ 20 kHz) (DIRECT mode)

Rated output:

1.2 V

• Digital

D/A output:

Rated output — 2 V (at 0 dB playback)

Total harmonic distortion — 0.008 % (1 kHz, at 0 dB)

S/N ratio — 102 dB

Dynamic range — 100 dB

Format — Digital audio interface

Digital input:

• Phono equalizer (PHONO input — REC OUT)

Input sensitivity:

2.5 mV

RIAA deviation:

±1 dB (20 Hz to 20 kHz)

S/N:

74 dB (A weighting, with 5 mV input)

Rated output:

150 mV

Distortion factor:

0.03 % (1 kHz, 3 V)

Video section

• Standard video connectors

Input / output level and impedance:

1 Vp-p, 75 Ω/ohms

Frequency response:

5 Hz ~ 10 MHz — +0, -3 dB (when video convert set to "OFF")

• S-Video connectors

Input / output level and impedance:

Y (brightness) signal — 1 Vp-p, 75 Ω/ohms

C (color) signal — 0.286 Vp-p, 75 Ω/ohms

Frequency response:

5 Hz ~ 10 MHz — +0, -3 dB (when video convert set to "OFF")

• Color component video connector

Input / output level and impedance:

Y (brightness) signal — 1 Vp-p, 75 Ω/ohms

P_B / C_B signal — 0.7 Vp-p, 75 Ω/ohms

P_R / C_R signal — 0.7 Vp-p, 75 Ω/ohms

Frequency response:

5 Hz ~ 100 MHz — +0, -3 dB (when video convert set to "OFF")

HD Radio section

Receiving Range:

Usable Sensitivity:

S/N (IHF-A):

Total harmonic Distortion (at 1 kHz):

[FM]

(note: μV at 75 Ω/ohms, 0 dBf = 1 × 10⁻¹⁵ W)

87.5 MHz ~ 107.9 MHz

1.5 μV (14.8 dBf)

MONO 78 dB

STEREO 68 dB

HD 85 dB

MONO 0.1 %

STEREO 0.2 %

HD 0.02 %

[AM]

530 kHz ~ 1710 kHz

20 μV

85 dB

0.02 %

General

Power supply:

AC 120 V, 60 Hz

Power consumption:

70 A

0.1 W (Standby)

Maximum external dimensions:

434 (W) x 171 (H) x 414 (D) mm (17-3/32" x 6-47/64" x 16-19/64")

Weight:

12.9 kg (28 lbs 7 oz)

Main remote control unit (RC-1118)

Batteries:

R6/AA Type (two batteries)

Maximum external dimensions:

52 (W) x 243 (H) x 21 (D) mm (2-3/64" x 9-9/16" x 53/64")

Weight:

184 g (Approx 6.5 oz) (including batteries)

Sub remote control unit (RC-1121)

Batteries:

R03/AAA Type (two batteries)

Maximum external dimensions:

49 (W) x 220 (H) x 24.5 (D) mm (1-59/64" x 8-21/32" x 31/32")

Weight:

114 g (Approx 4 oz) (including batteries)

※ For purposes of improvement, specifications and design are subject to change without notice.

DENON
www.denon.com

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